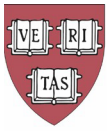




Harvard CBI Exposure Control Plan

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Exposure Control Plan

Introduction & Scope

The Occupational Health and Safety Administration (OSHA) oversees the Bloodborne Pathogens Standard (29 CFR 1910.1030), requiring employers to minimize the risk of exposure to bloodborne pathogens that are found in blood and other potentially infectious materials. Bloodborne pathogens are pathogenic microorganisms present in human blood, capable of causing disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV). Other potentially infectious materials (OPIM) that may harbor bloodborne pathogens consist of:

- Human bodily fluids, as defined by OSHA
- Human tissues, organs, cells, or cell lines
- Extracted human teeth and saliva in dental procedures
- Cultures of bloodborne pathogens
- Blood or tissue from experimentally infected animals

In accordance with this standard, Harvard University is committed to providing a safe and healthy work environment by striving to minimize or eliminate occupational exposure to bloodborne pathogens. Included in this plan are the following:

- Plan Administration
- Exposure Risk Determination
- Methods of Exposure Control
- Personal Protective Equipment
- Biological Waste Disposal
- Biohazard Labels
- Hepatitis B Vaccination
- Post-Exposure Evaluation and Follow-Up
- Training
- Recordkeeping



Plan Administration

Supervisor/Departmental Contact/Principal Investigator: **Douglas Richardson**

- The supervisor/departmental contact is responsible for the execution of the exposure control plan. They will manage the maintenance, review, and updates to the document annually, whenever new procedures or tasks are added, and if the general scope of work changes. The supervisor/departmental contact will be responsible for the following, as part of the review:
 - Documenting the annual assessment of the ECP to evaluate the effectiveness of controls to eliminate or reduce exposure to bloodborne pathogens, reflecting updates in exposure control technologies and any changes to job and job tasks that would alter risk.
 - Ensuring all personnel who have occupational exposure to blood or other potentially infectious materials comply with the procedures and work practices outlined in this plan.
 - Providing personnel with the required personal protective equipment (PPE), engineering controls, labels, and other items required under this plan and ensuring that adequate supplies of this equipment are available to staff.
 - Ensuring that all medical actions required by the standard are performed and that appropriate health and OSHA records are maintained.
 - Providing work-specific training, documentation of training, and ensuring the exposure control plan is available to personnel, OSHA, and other regulatory representatives.
 - Offering workers with potential for exposure to blood or OPIM the Hepatitis B vaccination prior to starting work with these materials and maintaining documentation of this offer.



Exposure Risk Determination

The following is a list of job titles with tasks that have reasonably anticipated exposure to blood or other potentially infectious materials in the course of their duties for Harvard University. See Appendix B for examples.

Job Title/Classification	Department/Location	Tasks/ Procedures Performed
Researcher	HCBI	Imaging human cell cultures, imaging infectious diseases, imaging unfixed tissue

Methods of Exposure Control

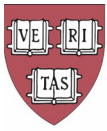
- **Universal Precautions**
 - All persons who fall under this ECP will utilize universal precautions—the concept of treating all blood and OPIM as potentially infectious.

- **Exposure Control Plan (ECP)**
 - The ECP outlines measures for evaluating potential exposure to blood and other potentially infectious materials, as well as methods of eliminating or reducing the risk of exposure.
 - Persons covered by the bloodborne pathogens standard receive an explanation of the ECP during their initial training session. Controls outlined within the plan will also be reviewed in the annual refresher training. All persons can review this plan at any time during their work shifts by contacting the Supervisor/Departmental Contact. If requested, a written copy of the ECP must be provided free of charge and within 15 days of the request.



- **Engineering and Work Practice Controls**

- An engineering control is any equipment or structure that is used to aid staff in preventing exposure to blood or other potentially infectious material. Work practices may also be used to reduce exposure by modifying how persons complete tasks. Examples of these controls include:
 - Reducing sharps use wherever possible. Sharps should not be manipulated (recapped, bent, etc.) before disposal and must be disposed of only in a closable, hard-walled, puncture-resistant, labeled sharps container. Use only mechanical means of handling sharps (e.g., dust broom and pan for blood contaminated broken glass).
 - Working in ways to minimize splashing, spraying, and droplets of blood and OPIM.
 - Separating food and drinks from areas where blood or other potentially infectious materials are present. Eating, drinking, smoking, and handling personal items are prohibited where blood and OPIM are present.
 - Labeling contaminated items or equipment used to store, transport, or process blood or OPIM with a biohazard label that is red or orange.
 - Decontaminating surfaces and equipment with an appropriate disinfectant (record disinfectant type and procedure in the table below), minimally at the end of work and whenever contamination is obvious.
 - Washing hands after removing PPE and after completing work.
- Identify specific equipment or practices to reduce exposure based on the tasks listed in the Exposure Determination. See Appendix B for examples.



Item/Practice	Description
Gloves	Working with BL1 or BL2 samples
Lab coat	Working with BL2 samples
Safety glasses	Working with BL1 or BL2 samples outside of Biosafety Cabinet
Closed toed shoes	Working in HCBI

Personal Protective Equipment (PPE)

- Personal Protective Equipment is the last layer of protection from exposure to blood or other potentially infectious materials.
- The supervisor must ensure that required PPE is appropriate for reducing the risk of exposure, purchased and available for use during the work shift, and replaced as needed.
- All PPE users must observe the following precautions:
 - Wash hands as soon as possible after removing gloves and other PPE.
 - Remove and replace PPE after it becomes contaminated and remove it completely before leaving the work area.
 - All used, disposable PPE that is contaminated or potentially contaminated must be placed in the appropriate biowaste containers.
 - Wear gloves when it is reasonably anticipated that there may be hand contact with blood/other potentially infectious materials or contaminated items and surfaces.
 - Replace gloves if they are torn, punctured, contaminated, or if their ability to function as a barrier is compromised.
 - Never wash or decontaminate disposable PPE for reuse.
 - Wear appropriate face and eye protection when procedures may generate splashes, sprays, spatters, or droplets of blood or other potentially infectious materials.
 - Remove any garments that have been contaminated with blood or other potentially infectious materials as soon as possible.



- Any reusable cloth PPE will be laundered by a service provided by the university, on or off-site, by trained personnel. Reusable PPE, such as protective eyewear or face shields, must be wiped down with an appropriate disinfectant following use. See Appendix B for examples.
 - All contaminated laundry must be handled as little as possible and placed in appropriately labeled containers prior to laundering.
 - Name of service/location of on-site laundering facility: Racks in the basement of Biolabs

PPE to be Used	Associated Tasks
Gloves	All work with biological materials and chemicals
Safety glasses	All work with biological materials and chemicals that does not take place in a safety cabinet
Lab coat	All work with BL2 materials and chemicals



Biowaste Disposal

- **Biological waste**
 - Liquid waste containing biological materials should be treated for at least 20 minutes with either bleach (final dilution of 10% bleach or 0.5% sodium hypochlorite) or other approved disinfectant before disposal. Contact biosafety@harvard.edu with questions.
 - Solid waste is placed in reusable, plastic biowaste bins or disposable biowaste cardboard boxes labeled with the biohazard symbol and are lined with red, biowaste bags (two red bags if using cardboard biohazard waste boxes). This prevents spillage or protrusion of contents during handling.
- **Sharps disposal**
 - Needles, scalpels, lancets, slides, coverslips, glass pipettes, capillary tubes, broken glass, or similar sharp materials contaminated with blood or other potentially infectious materials must be collected in an appropriately labeled, closable, hard walled, puncture-resistant sharps containers.
- **Waste Containers**
 - Waste containers need to be conveniently located near the areas where work is being performed. If your job only sporadically involves potential contact with blood or OPIM, you may need to request these containers
 - Contact biosafety@harvard.edu with questions about where to obtain different containers.

Biohazard Labels

Specific labeling, which incorporates the universal biohazard symbol (red or orange), must be placed on any equipment such as regulated waste containers, containers storing blood or other potentially infectious materials, equipment used in procedures with blood or other potentially infectious materials, etc. These labels are used to warn personnel about the risk of bloodborne pathogen contamination. If you need any labels, please contact the biosafety office via biosafety@harvard.edu.



Hepatitis B Vaccination

EHS Bloodborne Pathogens training provides information to staff on Hepatitis B vaccinations—addressing safety, benefits, efficacy, methods of administration, and availability.

The Hepatitis B vaccination series is available at no cost through the employer after initial Bloodborne Pathogens training and within 10 days of initial assignment to all persons identified in the exposure determination section of this plan. Vaccination is encouraged unless:

- Documentation exists that the person has previously received the series
- Antibody testing reveals that the person is immune
- Medical evaluation shows that vaccination is contraindicated

Persons falling under the exposure determination of this plan must fill out the Harvard University Hepatitis B Vaccination Offer form whether they plan on accepting the vaccination or declining it. If there is a question of immunity, persons can also request antibody testing to determine the need for vaccination. Persons who initially decline may request and obtain the vaccination at a later date.

The form is located in Appendix A and on the Harvard EHS website at:

https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/hepatitis_b_vaccination_offer.pdf

A copy of the completed form will be kept with users' PI. This copy must be maintained for the duration of work at Harvard.

Post-Exposure Evaluation and Follow-Up

If an exposure event occurs:

- For any exposure through a cut or break in the skin, wash the affected area thoroughly with soap and lukewarm water for at least 15 minutes.
- For a mucous membrane exposure, rinse the affected area continuously with lukewarm water for at least 15 minutes.
- Cover the area with a sterile bandage or gauze.



HARVARD

Campus Services

ENVIRONMENTAL HEALTH & SAFETY

- Call Harvard University Health Services (UHS) for immediate treatment or go to an emergency care facility.
 - For HMS, HSDM, or HSPSH, call 617-432-1370
 - For FAS, call 617-495-5711
 - For Law School, call 617-495-4414
 - For Business School, call 617-495-6455

Provider may wish to test the exposure material to determine HIV, Hepatitis B, or Hepatitis C infectivity, unless already known, to aid occupational health staff.

Following exposure treatment:

- Report the incident to your supervisor. Your supervisor must complete an incident report either online or over the phone by following the steps outlined here:
<https://www.ehs.harvard.edu/programs/accident-reporting-investigation>
 - Document the routes of exposure and how the exposure occurred.
 - Identify and document the source of exposure material.
- The supervisor and EHS will review the circumstances of the exposure incident to determine:
 - Engineering controls in use at the time.
 - Work practices followed.
 - A description of any devices in use.
 - Protective equipment or clothing that was used at the time of the exposure incident (gloves, eye shields, etc.).
 - Location of the incident.
 - Procedures being performed when the incident occurred.
 - Personnel training record.
 - If any additional reporting is required.

Training

Initial and annual training for bloodborne pathogens takes place in an online training format recorded within the Harvard Training Portal (HTP), though some in person classes can be given. The training must be taken each year.



Recordkeeping

Training records are kept within HTP. Once training has been completed, records are available online.

All medical records are kept confidential and maintained for the duration of work at Harvard University, plus 30 years. Records will contain the following:

- Hepatitis B vaccination status including vaccination dates and any medical records relevant to the individual's vaccination status.
- Results of any post-exposure evaluations, examinations, medical testing, or follow-up procedures.

All injuries from contaminated sharps are also recorded in a Sharps Injury Log through the post-exposure online reporting system that is used for all injuries across campus. All recorded incidents must include at least:

- Date of the injury,
- Type and brand of the device involved (syringe, scalpel, etc.),
- Department or work area when the incident occurred,
- Explanation of how the incident occurred,

Injury reporting and follow-up should include this information. This log must be kept and maintained by the university for at least five years following the end of the calendar year covered. The log is housed centrally online.

Supervisor/Departmental Signature _____

Date _____



Annual Plan Review Log

The Supervisor/Departmental Contact or their designee has reviewed, and updated, if necessary, the applicable plan(s) for his/her area. If using an alternative log or another page, please note location here.

Signature of Reviewer	Date of Review/Update



Appendix A - Harvard University Hepatitis B Vaccination Offer

For personnel at Harvard University with occupational exposure to Bloodborne Pathogens.

Please complete the Harvard University Hepatitis B Vaccination Offer Form on page 2 if you may come in contact with human blood or other potentially infectious human materials in the normal course of your job duties. As required by the OSHA Bloodborne Pathogen Standard (BBP), Harvard will make available at no charge the hepatitis B virus vaccine series to all Harvard personnel who have potential occupational exposure to human blood and other potentially infectious material as defined in the OSHA BBP Standard unless that person has (a) previously received the complete hepatitis B vaccination series, or (b) antibody testing has revealed immunity, or (c) the vaccine is contraindicated for medical reasons. Persons have the right to accept or decline the vaccine.

After reading the following *Training Points for Personnel Offered the Hepatitis B Vaccine* below, please fill out and check the appropriate boxes on page 2, Harvard University Hepatitis B Vaccination Offer Form.

Training Points for Personnel Offered the Hepatitis B Vaccine

1. Offered at no cost, the person may initially turn down the offer to be vaccinated, but can request vaccination at a later date, without cost, if s/he is still at risk from an occupational exposure. Persons who do not wish to be vaccinated must read and sign the Vaccine Declination Statement included on this form.
2. Vaccine Efficacy, Safety, Benefits (Source: WHO Fact sheet N°204 Revised August 2008 Hepatitis B)
 - The complete vaccine series induces protective antibody levels in more than 95% of infants, children, and young adults. After age 40, protection following the primary vaccination series drops below 90%. At 60 years old, protective antibody levels are achieved in only 65 to 75% of those vaccinated. Protection lasts at least 20 years and should be lifelong.
 - The vaccine has an outstanding record of safety and effectiveness. Since 1982, over one billion doses of hepatitis B vaccine have been used worldwide. In many countries where 8% to 15% of children used to become chronically infected with HBV, vaccination has reduced the rate of chronic infection to less than 1% among immunized children.
 - A vaccine against hepatitis B has been available since 1982. Hepatitis B vaccine is 95% effective in preventing HBV infection and its chronic consequences and is the first vaccine against a major human cancer.